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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/937,936	02/01/2002	Jean-Yves Dube	14074-1" US"	8820

7590
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12/18/2002

EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/937,936

Applicant(s)

Examiner

Burton S. Mullins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The references cited in the international search report have been considered; however, in order to insure that these references are printed on the face of the patent, applicant is requested to submit a list on a Form 1449.

Specification

3. This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.
4. The disclosure is further objected to because of the following informalities: Numerous typographical errors appear throughout the specification. For example, on p.2, line 2, "hall" should be capitalized and the second recitation "hall detector" should be --hall detectors--. See also p.4, lines 2-3. On p.3, line 1, change "system" to ---systems---.
5. The incorporation of essential material in the specification on p.3. lines 9-10 and p.7, lines 18-20 (denoted by [2] and [1], respectively) by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant,

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stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973). Appropriate correction is required.

Claim Objections

6. In the preliminary amendment, new claims 11-14 were improperly numbered. They have been re-numbered as claims 12-15, respectively.
7. Claims 1-15 are objected to because of the following informalities: In claims 1-2, insert a space in "therebeing". In claims 4 and 13, delete second "are". Appropriate correction is required. In claim 6, change "as" to -at-. In claims 9 and 15, line 5, insert --- of---- after "generation." In claim 11, delete duplicate "cylindrical rotor". Also, the punctuation of "magnetic clearance gap, therebetween" and "around the teeth said rotor" are improper.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
9. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 1 and 2, recitation "therebeing one coil per slots" and "therebeing two coils per slots" makes no sense. In claim 3, recitation "or two coils per slots"

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contradicts the "one coil per slots" [sic] in claim 1. In claims 4 and 13, "to or side some" makes no sense. Claims 8 and 14 are indefinite because it is not clear if the rotor is connected to the wheel hub only during "motorized" mode, or if this is the case for "generator" mode as well. In claims 9 and 15, "and using a single switch modulation technique" is a dangling participle phrase. In claim 12, "and a wound winding around said teeth" is vague. Should this be ---a winding wound around said teeth---? Also, "one of either one coil per slot" contradicts the "two-coil per slot" recitation in claim 2. In claim 11, "and definining teeth between said slots" is a dangling participle without antecedent basis, while "and therefore its arresting force" is vague and indefinite.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Katsuta et al. (JP 10-285891) in view of Chan (GB 2289991). Katsuta generally teaches a three-phase, brushless dc motor connected to a hub of said wheel, for driving a vehicle wheel (Figs.1-2, 5-6&8). The motor includes an outer, permanent-magnet rotor with an internal stator having plural poles (Figs.6&8). Katsuta does not teach various details, including 22 rotor poles and 24 stator slots.

Chan teaches a brushless DC motor comprising a cylindrical rotor 3 (Fig.5) with multiple poles 2 constructed with segments of permanent magnet material 1 alternatively magnetized north and south (Fig.3), a stator core 1 of ferromagnetic material and defining a magnetic clearance gap therebetween (Fig.4), said stator core having multiple slots and defining teeth between said slots, a three phase winding A/B/C (Fig.1, p.1, last paragraph-p.2, first paragraph) with coils of insulated wire (inherent) being wound around the teeth; and control circuit (Fig.9) means to control the torque of said motor and therefore its arresting force. Regarding the pole/slot combination of 22/24, Chan teaches that the number of rotor poles p is related to the number of stator slots s by the equation $p=s\pm 2$. Hence, it would not require undue experimentation to reach applicant's particular design of $p=22$ and $s=24$. The topology disclosed by Chan high power density, efficiency and wide speed range (p.3).

It would have been obvious to modify Katsuta and provide the stator/rotor pole configuration per Chan since this would have been desirable to improve power density, efficiency and speed range.

Allowable Subject Matter

12. Claims 1-10 and 12-15 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action. As best understood, the prior art does not teach, in a three-phase, brushless DC motor for powering an electrical vehicle, the combination of a cylindrical, outer-rotor with twenty-two, alternating, permanent magnet poles, a stator core having twenty-four slots, and a winding with the connection patterns A', C, C, B', B', A, A, C', C', B, B, and A' (claim 1), or C', C, C', C,


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B, B', B, B', A', A, A', A, C, C', C, C', B', B, B', B, A, A', A, A' (claim 2), for reducing torque ripple.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
December 12, 2002